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108.03 PROSECUTION AND PROGRESS

Unless otherwise specified, the Contractor shall furnish the Engineer with a complete and practicable Critical Path Method (CPM) Project Schedule (Sequence of Construction).

A. GENERAL COMMENTS

Construction contracts require an integrated schedule controls program that the Contractor shall comply with until contract completion. This schedule shall be the contractor's working schedule and shall be used to plan, organize, and execute the work, record and report actual performance and progress, and show how the general contractor plans to complete all remaining work as of the end of each progress report period. The contractor shall utilize the Project Schedule in planning, scheduling, coordinating, and performing the work including all activities of subcontractors, equipment vendors, and suppliers. The following schedule submittals are required:

- 1. PRELIMINARY PROJECT SCHEDULE
- 2. PROJECT SCHEDULE BASELINE
- 3. BI-WEEKLY STATUS SCHEDULE
- 4. RECOVERY SCHEDULE (IF NECESSARY)

The Contractor shall use software capable of preparing, stating and revising CPM (Critical Path Method) schedules using precedence diagramming methods. The software shall be easily compatible with the Department's software - Primavera Project Planner, and capable of producing the reports and graphs specified herein. All costs associated with these requirements shall be part of the Contractor's overhead.

B. PROJECT SCHEDULE REPORTING REQUIREMENTS

- 1. Schedule Narrative. The intent of the Narrative is to provide a summary of the contents of the schedule. At a minimum the Contractor should describe the sequencing of the work in terms of area and work activities and provide the rationale for the sequence that was selected by the Contractor.
 - 1. The schedule narrative for the Preliminary Project Schedule and Project Baseline Schedule shall: (1) itemize and describe the flow of work for all activities on the critical path; (2) compare Early and Late Dates for activities on the critical path.
 - b. As part of the updating process, the contractor shall prepare a Narrative Progress Report describing:
 - (1) the physical progress during the report period,
 - (2) plans for the work during forthcoming report period,
 - (3) actions planned to correct any adverse float predictions,
 - (4) an explanation of potential delays and/or problems and their estimated impact on performance and all project completion dates.
 - (5) revised logic (as-built and projected) and changes in activity durations and costs
 - (6) a general explanation of the alternatives for schedule recovery to mitigate any potential delay and/or cost increases.
- 2. Activity Column/Bar Chart Diagram The Contractor shall provide an Activity Column/Bar Chart Diagram on 11@ x 17@ sheets (at a minimum), using a scale that yields readable plans and organized to be consistent with the activity codes described herein. Critical Path and Total Float shall be highlighted. The diagram of this schedule shall be a computerized Critical Path Method (CPM) type, and shall include the following:

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- (a) Activity Identification unique for each activity, which will stay with the activity throughout the duration of the project unless otherwise approved by the engineer.
- (b) Activity Description, with a legend of any abbreviations used.
- (c) Activities shall be organized by project area codes and work type (i.e. WBS), where warranted.
- (d) Activity durations shown in working days. No activity shall have a duration greater than 12 working days unless approved by the Department. (Shop drawing submittal and reviews).
- (e) Earliest Start & Finish Dates, Late Start & Finish Dates, Total Float and Calendar ID.
- (f) Indications of all float times with the critical path highlighted.
- (g) Diagrams shall be submitted on a medium suitable for reproduction and sheet size shall be at a minimum 11@x 17@x, with a title and revision block.
- 3. Detailed Predecessor/Successor Report. The Contractor shall provide a Detailed Predecessor/Successor Report detailing the logic ties between activities. The report shall include all activities, their predecessor and successors, and shall be sequenced by ascending activity identifier. This report shall include, for the activities and their predecessors and successors:
 - (a) Activity ID
 - (b) Activity Description
 - (c) Original Duration
 - (d) Remaining Duration
 - (e) Calendar ID
 - (f) Percent Complete
 - (g) Appropriate Coding
 - (h) Early Dates
 - (i) Late Dates
 - (i) Total Float
- **4. Cash Flow Report.** A breakdown shall be submitted that allocates values from Unit Price Bid items to each activity or item scheduled. The Cash Flow Report shall include all activities with the associated contract bid items, and shall be sequenced by ascending activity identification number. The report shall be organized to show: (1) activity ID and description; (2) forecast start and finish dates for each activity; (3) for updates, each activity shall show actual start and finish dates and variances; (4) monthly allocation of costs with cumulative total.
- 5. Schedule Reports. The Schedule Reports shall contain the following:
 - (a) A unique activity identification number and description
 - (b) Activity duration
 - (c) Earliest Start and Finish Dates/Latest Start and Finish Dates/Actual Start and Finish Dates
 - (d) Dollar Value loading of each activity
 - (e) Total Float
 - (f) Responsibility and Area Codes, with legend attached.
 - (g) Calendar ID B The following calendar formats (to be provided by the Department if necessary) will be the only ones used on all Department contracts unless otherwise approved by the engineer:

Calendar 1- 5-day workweek (includes Holidays and Winter Shut Down)

Calendar 2- Procurement

Calendar 3- 6-day workweek (includes Holidays and Winter Shut Down)

Calendar 4- 7-day workweek (includes Holidays and Winter Shut Down)

Calendar 5- 5-day workweek (includes Holidays and No Winter Shut Down)

Calendar 6- 6-day workweek (includes Holidays and No Winter Shut Down)

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Calendar 7- 7-day workweek (includes Holidays and No Winter Shut Down)

Calendar 8- Interstate 5-day workweek (includes Holidays and Winter Shut Down)

Calendar 9- Interstate 6-day workweek (includes Holidays and Winter Shut Down)

Calendar A- Seeding

Calendar B- Wetland Seeding

Calendar C- Plants B&B

The Schedule Reports shall be submitted in the following formats:

- 1. Sorted by Activity ID
- 2. Sorted by Early Start/Total Float
- 3. Sorted by Total Float/Early Start
- 4. Sorted by Area (Station, Stage, Phase, Geographic, etc.)

The entire submission shall include four (4) copies of the above and an electronic copy in high-density 3.5" disk format. The Department will review the above-referenced Narrative, Activity Column/Bar Chart Diagram, and Tabular Reports, as well as the overall content and integrity of the Contractor's proposed schedule for prosecution of work and for compliance with the Contract.

C. PRELIMINARY PROJECT SCHEDULE

As a condition for Notice to Proceed prior to the Award of Contract, and within 21 calendar days from the receipt of the Apparent Low Bidder Letter, the Contractor shall submit a Preliminary Project Schedule to the Department's Construction Operations Section for acceptance. The Preliminary Project Schedule shall represent the Contractor's work plan for the first ninety (90) days following the Award of Contract. The Preliminary Project Schedule shall show all work activities of items that the Contractor is required or plans to perform. In addition, the Preliminary Project Schedule shall show, in summary, the proposed sequence of work for the balance of the project.

The initial Preliminary Project Schedule shall be submitted as referenced in Paragraph B.1.b of Subsection 108.03 Project Schedule Reporting Requirements. The Department will return the schedule, within ten (10) working days of receipt, to the Contractor marked either "Acceptable" or "Revise and Resubmit." If revisions are required prior to acceptance, the Contractor shall provide, within ten (10) working days of receipt of Department comments, a revised schedule addressing all comments. This Preliminary Project Schedule shall be superseded and replaced by the Project Schedule Baseline following its review and acceptance by the Department.

D. PROJECT SCHEDULE BASELINE

The Project Schedule Baseline shall be submitted within 30 days after the Preconstruction Conference. The Project Schedule Baseline submittal shall reflect the entire work as awarded to the Contractor and shall not include any delays or any work involving Change Orders. The Engineer and the Contractor understand that float time is a shared commodity. The initial Project Schedule Baseline shall be submitted as referenced in Paragraph B.1.b of Subsection 108.03 Project Schedule Reporting Requirements. The Department will return the schedule, within ten (10) working days of receipt, to the Contractor marked either "Acceptable" or "Revise and Resubmit. If revisions are required prior to acceptance, the Contractor shall provide, within ten (10) working days of receipt of Department comments, a revised schedule addressing all comments. Failure to comply with the above will result in Progress Payments being withheld.

E. BI-WEEKLY STATUS SCHEDULE

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The Project Schedule shall be statused biweekly and submitted to the Department within 5 working days of the biweekly meeting. The Biweekly Status Schedule Submittal upon acceptance shall become the "Project Schedule of Record." The Bi-weekly Status Submission will not be accepted with Aout of sequence@ errors. Any logic changes and revisions to the overall logic plan shall be submitted as a Revision to the Project Schedule. All changes shall be addressed and detailed within the narrative. Meetings to discuss the schedule will be held onsite biweekly and additional meetings shall be called, as necessary, by the Department. Failure to attend meetings, submit a status, or revised schedule, biweekly will result in Progress Payments being withheld.

The contractor shall come to the updating meetings with the data prepared in advance to provide, as of the end of the updating period, a complete and accurate report of current procurement and construction progress and a depiction of how the contractor plans to continue the work to meet contract completion dates.

The above Status Submission shall consist of a schedule update form to be utilized to update the project, a detailed predecessor successor report as outlined in Paragraph B.3 of Subsection 108.03, and a schedule narrative as outlined in Paragraph. B.1.b of Subsection 108.03 Project Schedule Reporting Requirements. The entire update submission shall include four (4) copies of the above and an electronic copy in high-density 3.5" disk format.

6. RECOVERY SCHEDULE

The Contractor shall promptly take appropriate action to develop schedule recovery plans whenever the Contractor's actual physical progress is behind schedule when compared with the current Project Schedule. The Contractor shall submit a schedule recovery plan, to accompany the next Biweekly Status Submission immediately following the identification of such schedule and/or progress delays. The Recovery Schedule shall be submitted as a Revision to the Project Schedule. The Recovery Schedule shall be submitted in accordance with Paragraph B.1.b of Subsection 108.03 Project Schedule Reporting Requirements, however the Department may require the Recovery Schedule to be A Resource Loaded@ when the project is significantly behind schedule. In such cases the Contractor must detail the resources to be utilized on the project along with any manpower, material (form work, sheeting, shoring, etc) or equipment restrictions.

The Department will return the schedule, within ten (10) working days of receipt, to the Contractor marked either "Acceptable" or "Revise and Resubmit." If revisions are required prior to acceptance, the Contractor shall provide, within ten (10) working days of receipt of Department comments, a revised schedule addressing all comments. Failure to comply with the above will result in Progress Payments being withheld. The Recovery Schedule Submittal upon acceptance shall become the "Project Schedule of Record." Failure to submit such recovery plan shall provide a basis for future Progress Payments withholdings, either in whole, or in part, by the Department.